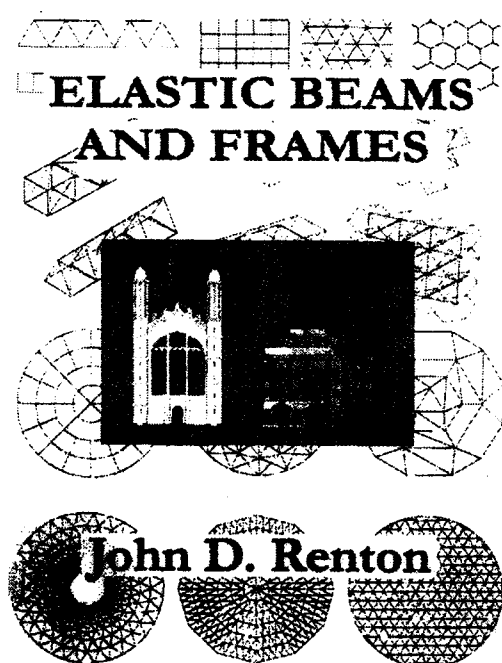


BOOK REVIEW

**Elastic Beams and Frames**

by John D. Renton

Publisher Camford Books. First revised edition (2000)

The book represents a very interesting example of the possibility to combine in a single publication basic theory of structures and quite advanced topics on the same subject. The author fulfills this objective in a reasonable size book, less than 400 pages divided into 15 chapters averaging 20 pages each plus 9 short appendices. A diskette is also included in the book. This diskette contains training as well practical executable programs on different aspects of structural analysis, such as cross-sections properties, general-purpose computer programs for the static, dynamic and stability analysis of simple bar structures, etc. The book figures are didactic and have been carefully drawn.

It should be pointed out that the title of the book is overly modest because, in addition to beams and frames, the author treats plates, conical shells and such space frames as braced domes. However, the ambitious scope and level must have challenged the author, to

select topics that should be included. Several examples will be addressed later. Some sections are treated at a more advanced level than others and it is indicated in the text that these advanced sections deserve a second reading. Despite these warnings these advanced sections can probably be fully understood only by a structural specialist rather than by the typical student.

The first chapters of the book are mainly dedicated to an introduction of main basic concepts and of the equations of linear structural analysis and elasticity. Beams subject to external actions producing both axial forces and bending moments are treated. Shear stress distributions due to uniform and non-uniform torsion as well to shear forces are also studied. Advanced topics related to stress distribution in beams are included, such as the cases of non-prismatic members, anisotropic and inhomogeneous beams and the difficult issue about the exact shear distribution over a beam cross-section. After a chapter dedicated to energy methods, considered basic in this book, a tentative general theory of beams is presented following Southwell's approach and others ideas with the concepts of standard or characteristic beam response to external actions. In the following chapters of the book various topics such as stability of beams (including flexural-torsional buckling, lateral buckling and local buckling of thin-walled beams), vibration of beams and optimum structural design of frames are introduced with many hints in quite advanced research directions. The next few chapters are dedicated to matrix computer analysis of structures and there follows a very short chapter about influence lines that, in this reviewer's opinion, should be placed earlier due to its elementary character. The book finishes with a very interesting and innovative chapter dedicated to regular structures, also known as spatially periodical structures.

In summary, although the book may be worthwhile for undergraduate students, its main readers should be researchers, specialists and practitioners interested in structural analysis and design. They can use the book as both a good introduction to some more advanced aspects of the theory of beams and frames and a means to understand the foundations and limits of this theory.

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